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Tara Sanchez*

1 Introduction

Constraints governing linguistic borrowing have been much discussed in qualitative terms as borrowing ‘universals’ (Harris and Campbell 1995) or degrees of structural influence triggered by varying amounts of social contact (Thomason and Kaufman 1988, Thomason 2001). Most research in this vein argues that either linguistic or social factors (but not both) can explain the incorporation of abstract elements from one language to another, and most of it is decidedly unsatisfying for Labovian sociolinguists. The notion that only one type of factor can be responsible is oversimplified, and the qualitative frameworks that produce the arguments for these positions have no way to deal with the ‘exceptions’ or counterexamples to proposed constraints which have been found for nearly every factor proposed—what some might instead call ‘variation’.

This paper evaluates borrowing from a variationist perspective, weighing quantitatively the various linguistic and social factors proposed under qualitative theories. This is accomplished through a diachronic examination of the verbal morphology of Papiamentu (Iberian creole) for morphemes borrowed from Spanish, Dutch, and English. Texts and sociolinguistic interviews provide both real and apparent time evidence. Ethnography, census data, and historical information provide insight into potentially relevant social and demographic factors. This particular contact situation has the advantages of 1) multiple languages and 2) multiple communities with the same set of languages in contact. Each language in contact with Papiamentu has a different structure, so we can compare the effects of structural difference. Each of the islands where it is spoken has a different social history, allowing us to compare the effects of different social circumstances. Since social data and texts are available for various time periods on two of the islands (Aruba and Curaçao), linguistic changes can be compared to social changes.

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2 The Sociolinguistic Situation

Bonaire and Curaçao belong to the Netherlands Antilles; Aruba is no longer part of this island group. Throughout Dutch rule of these islands (beginning in the early 17th century), Dutch, Spanish, and Papiamentu were spoken there, though perhaps only the ruling class spoke all three. Dutch was spoken by a small number of soldiers and governors only. Papiamentu was the language of slaves, and was later adopted by Sephardic Jews and the Dutch. Proximity to the South American mainland (just 14 miles from Aruba) ensured that Spanish had a continuing presence as well. The Dutch and Jews spoke Spanish for trading, and the Jews began using Spanish in the synagogue. Catholic priests ran the only schools for those of African descent. They taught in Papiamentu or Spanish, and many people whose first language was Papiamentu could also speak at least some Spanish. Even when Dutch public schools opened at the end of the 19th century, former slaves had very little or no command of Dutch because it simply was not used in the wider community, and schools were not successful in teaching it.

The sociolinguistic situation changed drastically in the 20th century. An oil refinery opened on Curaçao in 1912, and another one opened on Aruba in 1928. The refineries brought three important changes: immigration, education, and widespread multilingualism. The refineries required large numbers of workers, so many people immigrated from around the Caribbean (largely Caribbean English speakers). Refinery workers needed at least a basic education, but most islanders had virtually none, so changes were made in the public school system. The biggest of these was that teachers made an effort to teach Dutch rather than just teaching in Dutch. For the first time, common people attained competence in Dutch, particularly in Curaçao, where the refinery was operated in Dutch. The refineries themselves also educated people. Aruba's refinery operated in English, and the company offered English and other classes to workers. English speaking immigrants learned Papiamentu, too, because though Dutch and English were used in the work environment, Papiamentu remained the language of the street. The result of these changes is that residents of these islands have communicative competence in four languages. During fieldwork in 2003, I found this to be the case for almost everyone under the age of 70. I met a few people over the age of 80 who were monolingual Papiamentu speakers, or who were bilingual in Spanish only. See Sanchez (2005) for a more detailed account of the political, social, and linguistic history of the islands.

3 Methods and Coding

The application of variationist methods to this data is not straightforward. First, the various linguistic and social factors mentioned in qualitative discussions must be quantified. Linguistic claims include 'structural compatibility' and 'structural simplification'. In functional terms, it has been argued that borrowing fills grammatical gaps, or that borrowing can renew morphology (a borrowed form replaces a native one). Finally, studies of long-term multilingual contact report convergence, or the falling together of surface word orders of the languages in contact. I developed eight factor groups to account for these five linguistic principles¹ (Table 1). All factors except 'fill gap' are evaluated via more than one factor group, and several factor groups are involved in the evaluation of more than one of the proposed linguistic factors. 'Structural compatibility', for example, is evaluated via word order similarity, affix type similarity, and category marking. These three factor groups are also used (with shared features) to evaluate 'convergence'.

Linguistic Factors	Word Order Similarity	Affix Type Similarity	Category Marking	Allomorphy	Complexity	Fill gap	Renewal	Shared Features
structural compatibility	X	X	X					
structural simplification				X	X			
fill gap						X		
morphological renewal			X		X		X	
convergence	X	X	X					X

Table 1: Groups used to evaluate linguistic factors

Most factor groups have a predictable set of factors (Table 2), but a few require comment. Category marking is evaluated with a three-way distinction: two languages mark a grammatical category in the same way, mark a category with different distinctions, or one marks a category while the other does not. Complexity has the following factors: a borrowing introduces a new grammatical category, a new distinction within an existing category, or no new distinction. I identified a three-way distinction for fill gap as well: a language may not express a category or distinction that is expressed in an-

¹I conducted an exhaustive review of proposed linguistic factors, but was only able to quantify five. Sanchez (2005) gives extensive discussion.

other language, a language may express periphrastically what another expresses morphologically, or two languages may express a particular category or distinction morphologically. Other linguistic factors which were considered include: source language, morpheme type (bound or free), affix type (prefix or suffix), and borrowing type (morpheme, calque on periphrasis).

Group	List of Factors	Notes
Word order	yes	word + word-affix + word
similarity	no	
Affix type	yes	e.g. prefix or suffix
similarity	no	
Category	both mark category same way (or don't mark category)	
Marking	both mark category but with different distinctions	
	one does not mark category, one does	
Allomorphy	reduction	
	same amount	
	increase	
Complexity	new category	
	new distinction	
	no new nuance	
Fill gap	no expression of category or distinction	
	expression w/o morpheme	
	expression with morpheme	
Renewal	foreign form has no native counterpart	
	foreign form synonymous with native form of different type	
	foreign form synonymous with native form of same type	
Shared features	agrees with 0 languages	
	1 language	
	2 languages	
	3 languages	

Table 2: Factors tested in linguistic factor groups

There are problems associated with quantifying many of the social or demographic factors put forth as well. Here, I used language statistics to assign a weight to the percentage of L1 speakers of each of the four languages in contact (Table 3) for each year in which census data is available for Aruba and Curaçao² (Table 4). This provides a measure of the pressure exerted by each language, under the assumption that there will be more pressure from a

²There are insufficient texts available from Bonaire to include in this analysis, particularly from the earlier part of the 20th century. More recently, most existing texts (including books and newspaper articles) were written by a single author.

particular language if there are more L1 speakers of that language present on a given island at a given time.

Weight	% Population
1	0.1%- 1.5%
2	2-8%
3	9-15%
4	16-20%
5	20-25%
6	56-69%
7	69-77%
8	77-89%
9	89-100%

Table 3: Weights assigned according to percentage of population

Time Period	Census Year	Aruba				Curaçao			
		P*	D	S	E	P	D	S	E
1	(1844)**	---	-	-	-	-	-	-	-
2	1863	-	-	-	-	-	-	-	-
3	1900	----				-	-	-	-
4	1911/ 1912	9	1	1	1	9	2	2	0
5	1943	6	2	2	4	8	3	3	2
6	1960	7	2	1	2	8	3	1	1
7	1981	8	2	2	3	9	2	2	1
8	1991/1992	8	2	2	3	9	3	2	2
9	2000/ 2001	7	2	3	2	8	3	2	2

Table 4: Weights assigned for proportions of native speaking populations of each of the four major languages spoken on Aruba and Curaçao

* P= Papiamentu, D= Dutch, S=Spanish, E= English

** No census taken in this year. Texts dating 1775-1837 used for this time period.

*** Texts but no social data are available from the years marked with '-'.

**** No texts available for this time period on Aruba.

Now we come to assessing these linguistic and social claims. A central tenet of variationist sociolinguistics is Labov's Principle of Accountability (Labov 1972), which states that we must consider both applications and non-applications of a variable rule. Typically, this principle is applied by examining every occurrence and non-occurrence of a specific linguistic form. However, claims made about borrowing refer to the relationship between borrowed forms and the grammar as a whole and so must be considered from the perspective of the whole grammar. For this data, the Principle of Accountability requires us to compare all cases where a borrowing occurs with all cases where a borrowing could occur but does not. I want to identify, for

example, every place where there is a grammatical gap between Papiamentu and the languages that it is in contact with, and which of these gaps are eventually filled by a borrowing. Perhaps the ideal scenario would be to consider the entire morphosyntactic paradigm. Here, though, we take a first step in that direction with consideration of the verbal paradigm only.

I first listed all³ morphemes (bound and free), periphrastic forms⁴, and verb categories in the verbal systems of Dutch, Spanish, American English, and Caribbean English Creoles (CEC)⁵ (Table 5). These are the set of possible borrowings.⁶ In the far right column, I give morphemes and periphrastic forms⁷ which were used in Papiamentu in 1844 (many can be traced to a foreign source, and most were probably incorporated during creolization in the 17th and 18th centuries). To the left of that, I list borrowed forms which are used productively in Papiamentu in 2000. All forms in the 1844 column continue to be used in 2000. Considering each morpheme or periphrastic form just once, there are 189 possible borrowings here: 21 from English, 22 from Caribbean English Creole, 38 from Dutch, and 108 from Spanish. To illustrate: English has two possible person/number categories, one infinitive form, 6 commonly used copula forms, and one morpheme marking each of the following: gerund, past participle, present tense, past tense, future tense, and the conditional (that makes 15). English has two periphrastic forms involving the copula, gerund, and past participle: the progressive (copula + gerund) and the passive (copula + past participle). Papiamentu speakers could borrow one of the morphemes involved in any of the component parts of the periphrastic forms, or they could calque the periphrasis. The component parts of the periphrases (e.g. forms of the copula) were counted earlier, so here we simply count each periphrastic form once (now we have 17 possible borrowings). The final category for English is the perfect. This is formed with a form of the verb 'have' and a past participle. English commonly uses 'have', 'has', and 'had' here. I count each form of 'have' once, since Papiamentu speakers could borrow one of them to use in this construction, and I count the combination [HAVE] + PAST PARTICIPLE once,

³I consider only forms which are commonly used in speech, because a form which is never heard cannot be among the set of possible borrowings.

⁴I did not consider the future periphrasis 'going to', 'ir a', as the corresponding Papiamentu form is ambiguous with the serial verb beginning with *bai* 'go'.

⁵I consider two varieties of English because both are spoken on the islands. There are no known borrowings from CEC.

⁶The languages in this group do not mark categories and distinctions in the same way. When a language does not mark something, or marks something with a 'zero', there is an empty space in the table.

⁷Papiamentu has no other verb category markings.

since Papiamentu speakers might also calque this periphrasis (for a total of 21). Forms from the other languages were considered in this way as well. Spanish has the most possible borrowings because it marks more categories than the other languages. It is purely coincidental that English and CEC have approximately the same number of markings: CEC marks fewer categories overall, but has greater variation in the number of possible forms.

	<i>Eng- lish</i>	<i>CEC</i>	<i>Dutch</i>	<i>Spanish</i>	Papiamentu	
					2000	1844
CAT ⁸	3sg, not 3sg		1sg, 2/3sg, pl	1sg, 1pl, 2sg, 3sg, 3pl		
INF	to + V	a + V	-en	-ar, -er, -ir		
COP A	be is, am, are, was were	be, da	ben, bent, is, zijn, was, waren	ser, soy, eres, es, somos, son, era, eras, era, éramos, eran		ta, tabata
COP B				estar, estoy, estás, está estamos, están, estaba, estabas, estabámos, estaban		
GER	-ing		-ende	-ando, -iendo	-ando, -iendo	
PP	V + - ed		ge- + V +d/t/ en			STR, he- + V
PROG	COP + GER	de, di, a	COP + aan 't + INF	COP (ESTAR) + GER	COP+ GER	COP + V
HAB		juuzto, doz				

⁸CAT=category, INF=infinitive, V=verb, COP=copula, GER=gerund, PP=Past participle, STR=stress change, PROG=progressive, HAB=habitual, TMA=tense, mood, aspect marker, PASS=passive, PRES=present, PRET=preterit, IMP=imperfective, FUT=future, PERF=perfect, CON=conditional, SUBJ=subjunctive

	<i>Eng- lish</i>	<i>CEC</i>	<i>Dutch</i>	<i>Spanish</i>	Papiamentu	
					2000	1844
PASS	COP + PP		word, wordt, worden + PP	COP (SER) + PP	wordu + PP, ser + PP	TMA + PP
PRES	V + -s		V + -t, -en	o, as, a, amos, an, es, e, emos, en, imos		ta + V
PRET	V + - ed	bin, ben, min, en, wen	V + -te, ten	é, aste, ó, amos, aron, í, iste, io, imos, ieron		a + V
IMP		e, a		aba, ía, ábamos, ában, íamos, ían		tabata + V
FUT	will	IMP + go, o, wi, wã	zal, zult, zullen	aré, arás, ará, aremos, arán eré, éras, erá, eremos, erán, iré, irás, irá, iremos, irán		lo + V
PERF	have, has, ha d + PP	don, kaba	heb, hebt, hebben, had, hadden + PP	he, has, ha, hamos, han + PP		a + V
CON	would		zou/ zouden + PP	aríá, arías, aríamos, arían, ería, erías, eríamos, erían, iría, irías, iríamos, irían		lo tabata + V
SUBJ				e, es, emos, en, a, as, amos, an, ara, aras, aramos, aran, iera, ieras, ieramos, ieran		

Table 5: Verbal morphemes of the languages in the contact situation.

Unlike in traditional variationist studies, every instance of every morpheme is not coded here. The dependent variable is whether or not a form is used productively in Papiamentu at some point in time. For each of nine time periods, I code the 189 forms in Table 5 as borrowed (used productively) or not

(not used, or no evidence of productivity) (1701 tokens). Data come from texts⁹ from various time periods (Table 6), supplemented with sociolinguistic interviews recorded in 2003 (50 from Aruba, 52 from Curaçao). Speakers ranged in age from 18-82. Assuming no major changes in an individual's grammar after age 20, interviews provide evidence for the years 1941-2003. The analysis here largely reflects forms as used in the texts. Aruba texts dating 1913-1943 contained no examples of the periphrastic progressive, but the oldest speakers interviewed did in fact use the form. I coded this form as being in productive use as of 1943 on the basis of the apparent time data.¹⁰ Data from each island separately was analyzed with the GoldVarb 2001 statistical program (Robinson, Lawrence, and Tagliamonte 2001).

Time Period	Number of Texts		
	<i>Aruba</i>	<i>Curaçao</i>	<i>Total</i>
1. 1775-1837	1	4	5
2. 1844-1862	1	4	5
3. 1863-1899	0	29	29
4. 1900-1912	2	2	4
5. 1913-1943	3	24	27
6. 1944-1960	10	8	18
7. 1961-1980	2	13	15
8. 1981-1992	5	27	32
9. 1993-2001	30	6	36
TOTAL	54	117	171

Table 6: Number of texts according to time period and island.

4 Results

Gerundive *-ndo*, the periphrastic progressive, and the passivizing verbs *wordu* and *ser* were borrowed (Table 7). *-Ndo* is first attested in Aruba in 1803, and Curaçao in 1844, but the first evidence of productive use on both islands is in the 1860s. This form was used in the periphrastic progressive productively as early as 1916 (Curaçao) and 1943 (Aruba), and is attested in 19th century Curaçao. *Wordu* is productive on both islands by the 1860s, and first attested in Curaçao in 1852. *Ser* is attested in texts from Curaçao in 1943, and from Aruba in 1960. It is the only form not also attested in the interview data—no one used the *ser* passive in speech.

⁹Genres include letters, fiction, newspaper articles, poetry, plays, and songs.

¹⁰It is possible that this form was not productive in 1943, and that the oldest speakers acquired it well into adulthood, but the other explanation is more likely.

Borrowed Item	Source(s)	Function	Aruba	Curaçao
-ndo	Spanish	gerund	1862	1865
COP + GERUND	Spanish/English	progressive	1943	1916
wordu	Dutch	passive	1862	1871
WORDU + PP	Dutch	passive	1862	1871
ser	Spanish	passive	1960	1933
SER + PP	Spanish	passive	1960	1933

Table 7: First productive uses of borrowed items on Aruba and Curaçao

I will begin with some observations about the borrowed forms, and then discuss the statistical analysis. Several factors and factor groups were excluded from the analysis because no forms with those characteristics were borrowed. These are: source language-Caribbean English Creole, fill gap-no expression of a category or distinction, renewal-different type, time period-1, type of borrowing-verb category, word order similarity, and affix type similarity. Though these could not be analyzed statistically, they suggest some very strong linguistic constraints on borrowing. For example, if one language has something (like a verb person or number category) that another language simply does not express, that thing will not be borrowed. Similar word order and affix type may be prerequisites to borrowing.

Table 8 shows total borrowings per island over 8 time periods (excluding the earliest). The difference between the two islands is due to the fact that some became productive on Aruba later than on Curaçao.

<i>Island</i>	<i>Borrowed Forms</i>	<i>Not Borrowed</i>	<i>Total</i>
Aruba	50 (3%)	1462 (96%)	1512
Curaçao	53 (3%)	1459 (96%)	1512
Total	103 (3.4%)	2921 (96.6%)	3024

Table 8: Total borrowings per island.

Constraint models were constructed for each of the islands separately.¹¹ We begin with Curaçao. Table 9 gives significant constraints. Two purely linguistic factor groups were significant: renewal and complexity (two of the groups used to evaluate morphological renewal¹²). A form which is synonymous with some form of the same type in Papiamentu is likely to be borrowed, as is a form which does not introduce additional grammatical categories or additional distinctions within a category. The third significant group,

¹¹At NWAV 33, I presented an analysis where data from both islands were run together with 'island' as a factor group.

¹²Category marking is the third; it is not significant.

and the strongest set of constraints, is a cross between a linguistic and a social category: allomorphy and a measure of L1 English speakers on Curaçao. Borrowings that result in the same amount of allomorphy are favored. Looking back at Table 4, we see that Curaçao had '0' English speakers in 1911, and a value of '1' or '2' for every year after that. This significant result is thus more likely to refer to time (before vs. after 1943) rather than anything to do with English speakers.

Group	Factor	Weight
<i>Allomorphy and L1 English speakers</i>	Same and 1,2	0.996
	Same and 0	0.857
	Increased and 1, 2	0.449
	Increased and 0	0.375
<i>Renewal</i>	Synonymous, same type	0.683
	No recipient counterpart	0.212
<i>Complexity</i>	No new nuance	0.634
	Addl category or distinction	0.370
Log likelihood = -128.119		Input=0.032

Table 9: GoldVarb 2001 results for Curaçao

The model for Aruba is more complex (Table 10). Renewal and complexity are significant here, too. 'Fill gap' is also significant. Recall that one of the factors in this group, the one that says that a borrowing fills a grammatical gap, was excluded. What is significant here is really something more like 'grammaticalization via a foreign morpheme': the borrowing of a morpheme that expresses something which Papiamentu expresses periphrastically is favored. The weakest set of constraints deals with L1 English speakers, and here too, is more likely related to time. Table 4 shows a value of '1' in 1911, '4' in 1943, then '2' or '3' for every year after that. If these numbers referred to English speakers, we would have to say that borrowing is favored with 2-15% English speakers, but not with more or fewer. If they refer to time, we can say that borrowing is more likely to occur after longer periods of contact, which is much more reasonable. The final significant group combines two linguistic factors: allomorphy and shared features. Borrowings resulting in the same amount of allomorphy are favored, but a borrowing resulting in increased allomorphy is favored if, at the same time, three languages in the contact situation share the more complex form.

Group	Factor	Weight
<i>Renewal</i>	Synonymous, same type	0.772
	No recipient counterpart	0.109
<i>Allomorphy and Shared Features</i>	Same amount and 2 languages	0.989
	Same amount and 1 language	0.960
	Increased and 3 languages	0.573
	Increased and 1 language	0.390
<i>Fill gap</i>	Expression w/o morpheme	0.823
	Expression with morpheme	0.401
<i>Complexity</i>	No new nuance	0.649
	Add category or distinction	0.357
<i>L1 English speakers</i>	2 or 3 (weights)	0.569
	4	0.430
	1	0.303
Log likelihood = -127.885		Input 0.024

Table 10: GoldVarb 2001 results for Aruba

5 Conclusions and Implications

Table 11 summarizes the findings and their relationship to proposed linguistic factors. Factor groups marked with 'X' were never violated, those with '2' were significant for both Aruba and Curaçao, those with '1' were significant for only one island, and those with '0' were not significant. Bolded linguistic factors are strongest; italicized factors do not operate as proposed.

Linguistic Factors	Word Order	Affix Type	Complexity	Renewal	Allomorphy	Shared Features	Fill gap	Category Marking
structural compatibility	X	X						0
morphological renewal			2	2				0
convergence	X	X				1		0
<i>structural simplification</i>			2		2			
<i>fill gap</i>							1	

Table 11: Proposed linguistic factors and significance of factor groups

Structural compatibility, morphological renewal, and convergence seem to be operating here. More specifically, borrowings are possible if word order and affix type similarity exist, and a borrowing can replace some native form

of the same type provided that it does not introduce complexity. Borrowings generally do not lead to increased allomorphy, but may if doing so makes one language agree with the other three. Grammatical gaps do not trigger borrowing. 'Structural simplification' is a misnomer: borrowings do not make the recipient language structure simpler, but as noted for other constraints, there is a tendency to avoid increasing complexity, too. Clearly, some of the proposed linguistic universals have merit, but do not always operate exactly as proposed, and at least one (fill gap) is completely wrong.

Importantly for the field of language contact, there is no strong evidence that social factors play a role here apart from the existence of the contact situation. There remains the possibility that some factor that I could not quantify (such as prestige) is involved, but we can be certain that linguistic factors are always involved, and if this data is typical, the linguistic factors will be stronger than any social factors.

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